



Fixed Reference Station Working Group

Kevin Choi

Working Group Chair,

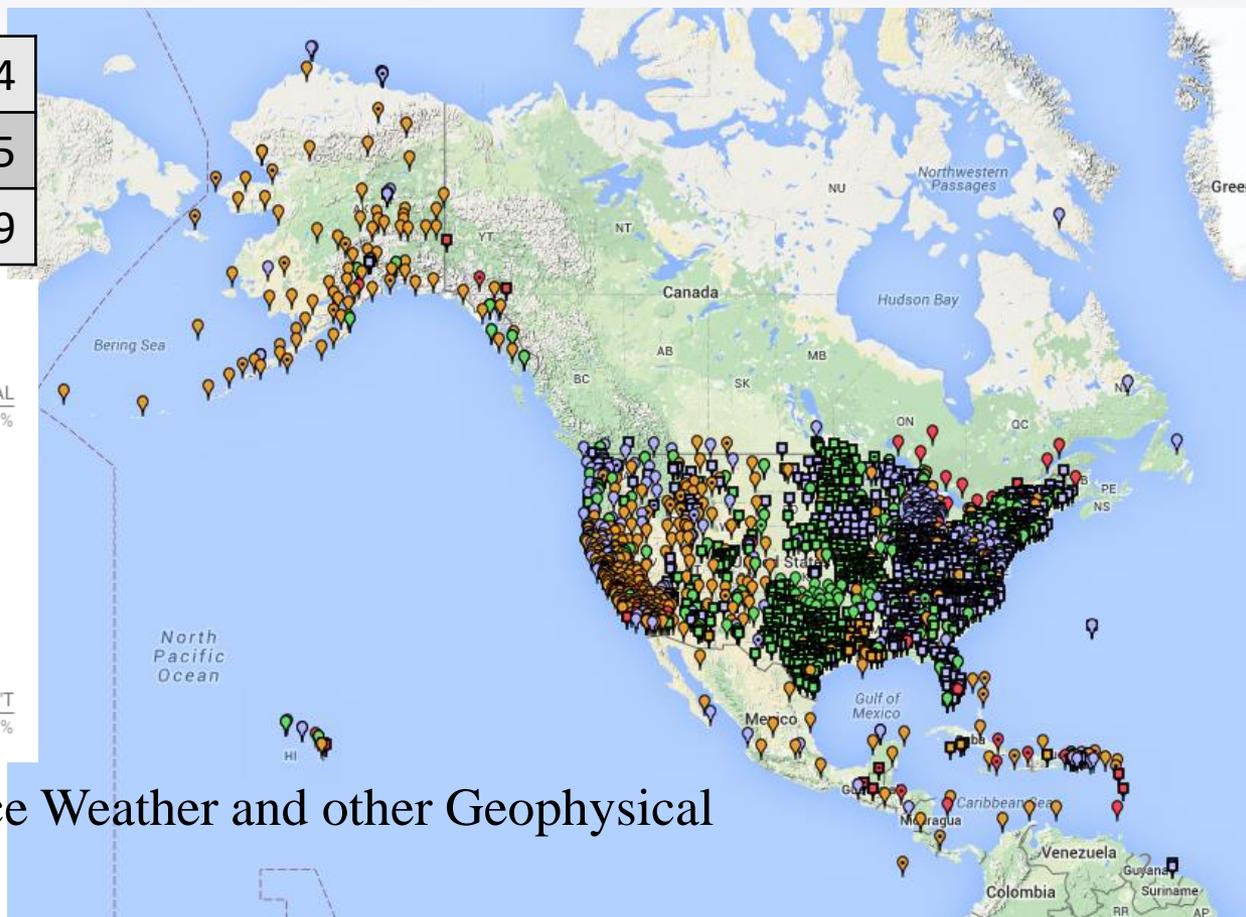
Chief, Continuously Operating Reference Stations Branch

National Geodetic Survey

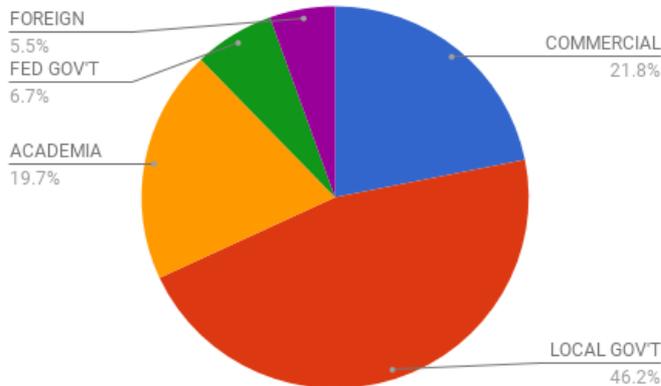
U.S. CORS Network

- ~1900 Continuously Operating Reference Stations
 - Run by various agencies and research groups
 - Provide access to the U.S. National Spatial Reference System

GPS only	524
GPS+GLO	1075
GPS+GLO+GAL	169



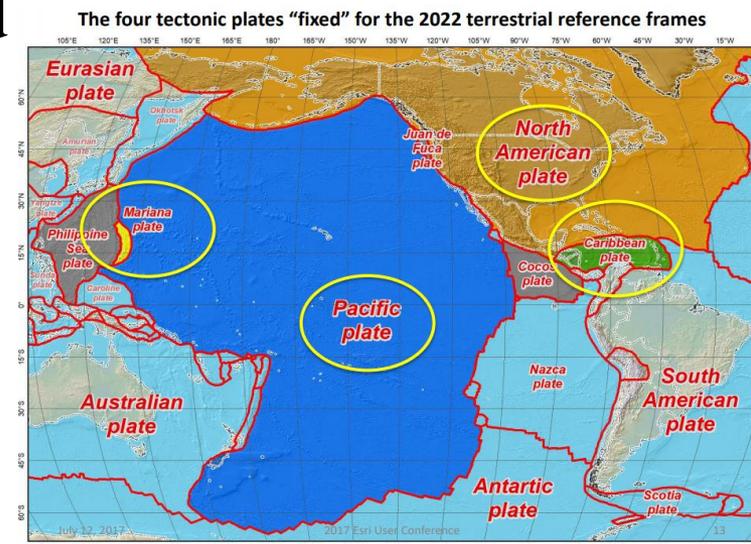
CORS Contribution



- Also support Space Weather and other Geophysical applications.

Foundation CORS Project

- Establish a backbone for the NGS CORS Program using an ultra-stable sub-network
- By 2022, the National Spatial Reference System (NSRS) will be modernized with CORS becoming a more foundational component.
- NGS will continue to support the ITRF and GGOS activities through International GNSS Service (IGS) reference sites.
- The NSRS will continue to be defined in relation to the ITRF (GGRF).
- Four Tectonic Plates to monitor
 - NATRF2022 - North America
 - PATRF2022 - Pacific
 - CATRF2022 - Caribbean
 - MATRF2022 - Mariana



Foundation CORS Project

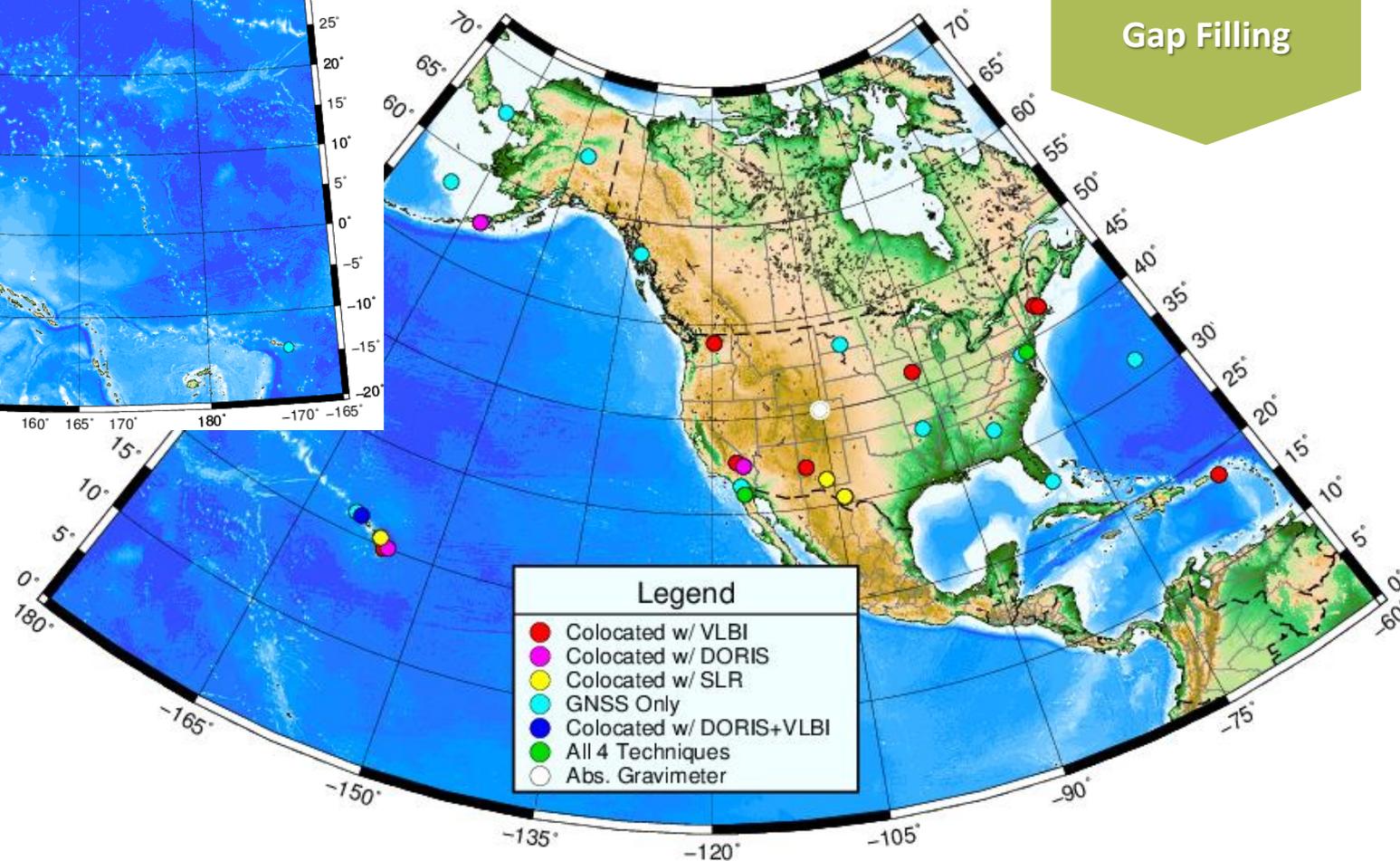
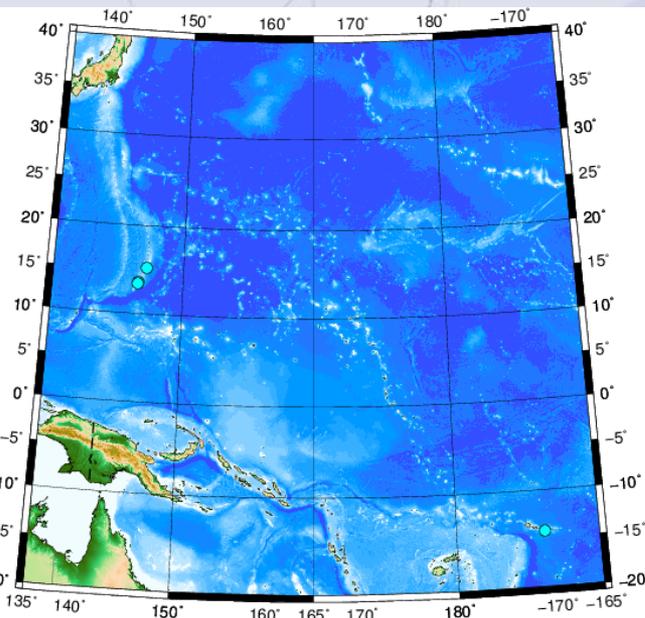
Colocation

Plate
Rotation

Geographic
Distribution

Gap Filling

Foundation CORS Plan



Tentative Sites

Table Legend

North Am.

Mariana

Pacific

Caribbean

Host Agency	Site	Location	Type
EarthScope - Plate Boundary Observatory (PBO)	AB09	Wales, AK	Additional
	P777	Arkansas	Geographic
	P804	Georgia	Geographic
	AB51	Petersburg, AK	Geographic
	ATQK	Atkasuk, AK	Geographic
	P802	North Dakota	Geographic
Federal Aviation Administration			
NASA – Jet Propulsion Laboratory	CDB8	Cold Bay, AK	DORIS
	BREW	Brewster, WA	VLBI
	CRO1	Saint Croix, VI	VLBI
	FAIR	Fairbanks, AK	Geographic
	GODE	Greenbelt, MD	DORIS+SLR+VLBI
	GOL2	Goldstone, CA	VLBI
	GUAM	GUAM	Geographic
	KOKB	Kauai, HI	DORIS
	MDO1	McDonald Observatory, Texas	SLR
	MKEA	Mauna Kea, HI	VLBI
	MONP	Mount Laguna, CA	DORIS+SLR
	NLIB	North Liberty, IA	VLBI
	PIE1	Pie Town, NM	VLBI
National Geodetic Survey	ASPA	American Samoa	Gap Filling
	BRSB	Bermuda	Gap Filling
	CNMR	Saipan, TQ	Geographic
	FLF1	Richmond, FL	DORIS
	GUUG	GUAM	Geographic
	WES2	Westford, MA	VLBI
	TBD	Apache Point, NM	SLR
	TBD	Fort Davis, TX	VLBI
	TBD	Fort Irwin, CA	DORIS
	TBD	Hancock, NH	VLBI
	TBD	Kitt Peak, AZ	VLBI
	TBD	Owens Valley, CA	VLBI
TMG2	Boulder, CO	Abs. Grav.	
Pacific GPS Facility	MAUI	Haleakala, HI	SLR
TBD	TBD x 2	2 locations in Caribbean	Geographic

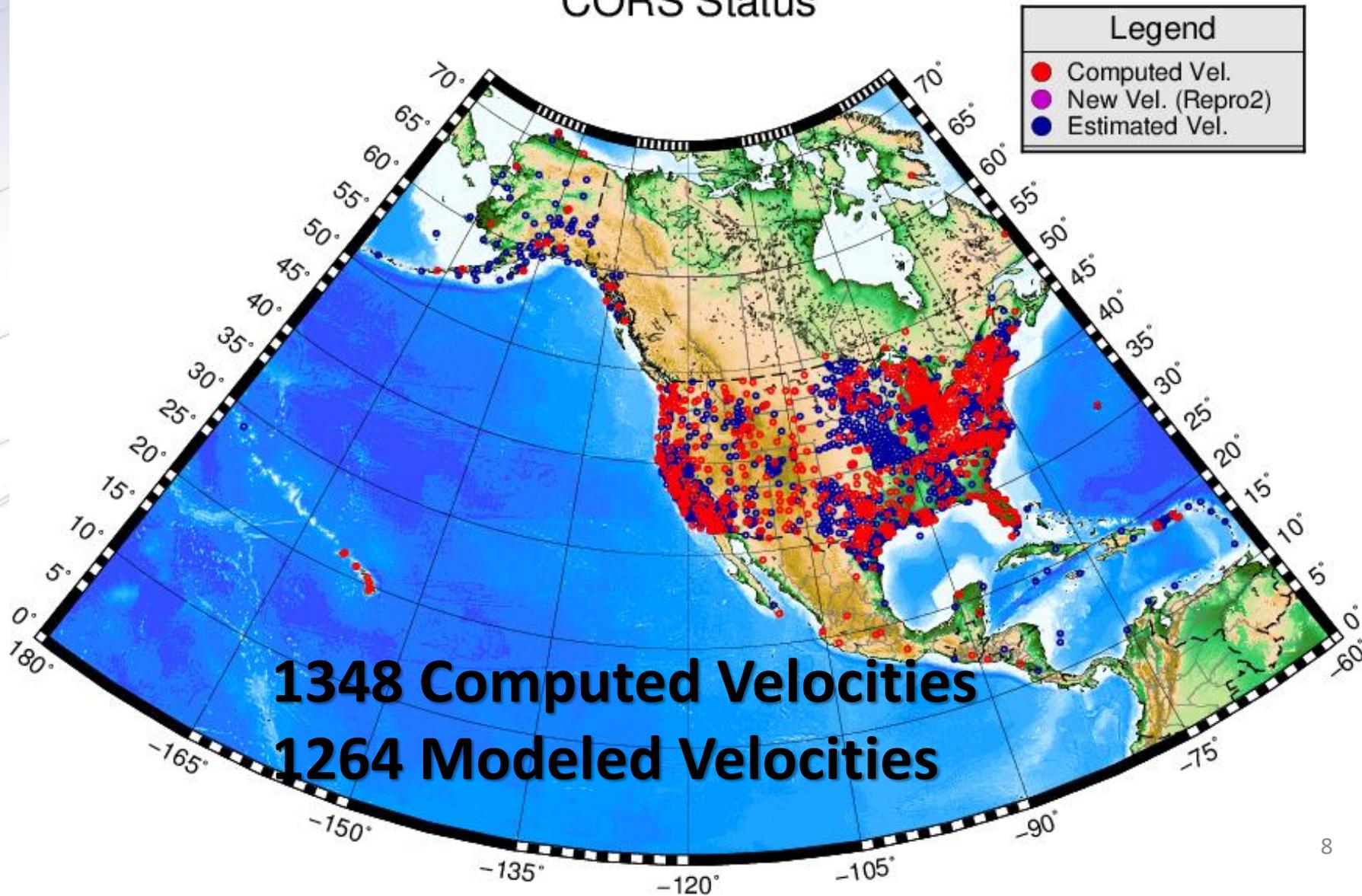
Current Status

- Foundation CORS 5-yr Project initiated in FY18 Q1
 - Station installed at Table Mountain, CO (collocated with an Abs. Gravimeter)
 - Repair completed: 2 stations (BRSG and WES2).
 - 1 station in Miami, FL is being repaired.
 - Initial draft passed the NOAA legal review
 - Working with other Federal/Local partners to initiate the discussion to customize the MOU
 - NASA (GGN stations)
 - NSF (PBO stations/VLBA)
 - FAA (DORIS station in Cold Bay, AK)
 - Pacific GPS Array (Stations in the Pacific islands)
 - Initiated discussion with the countries in the Caribbean plate to bring in some stations in that area

Back up slides

Reprocessing Campaigns

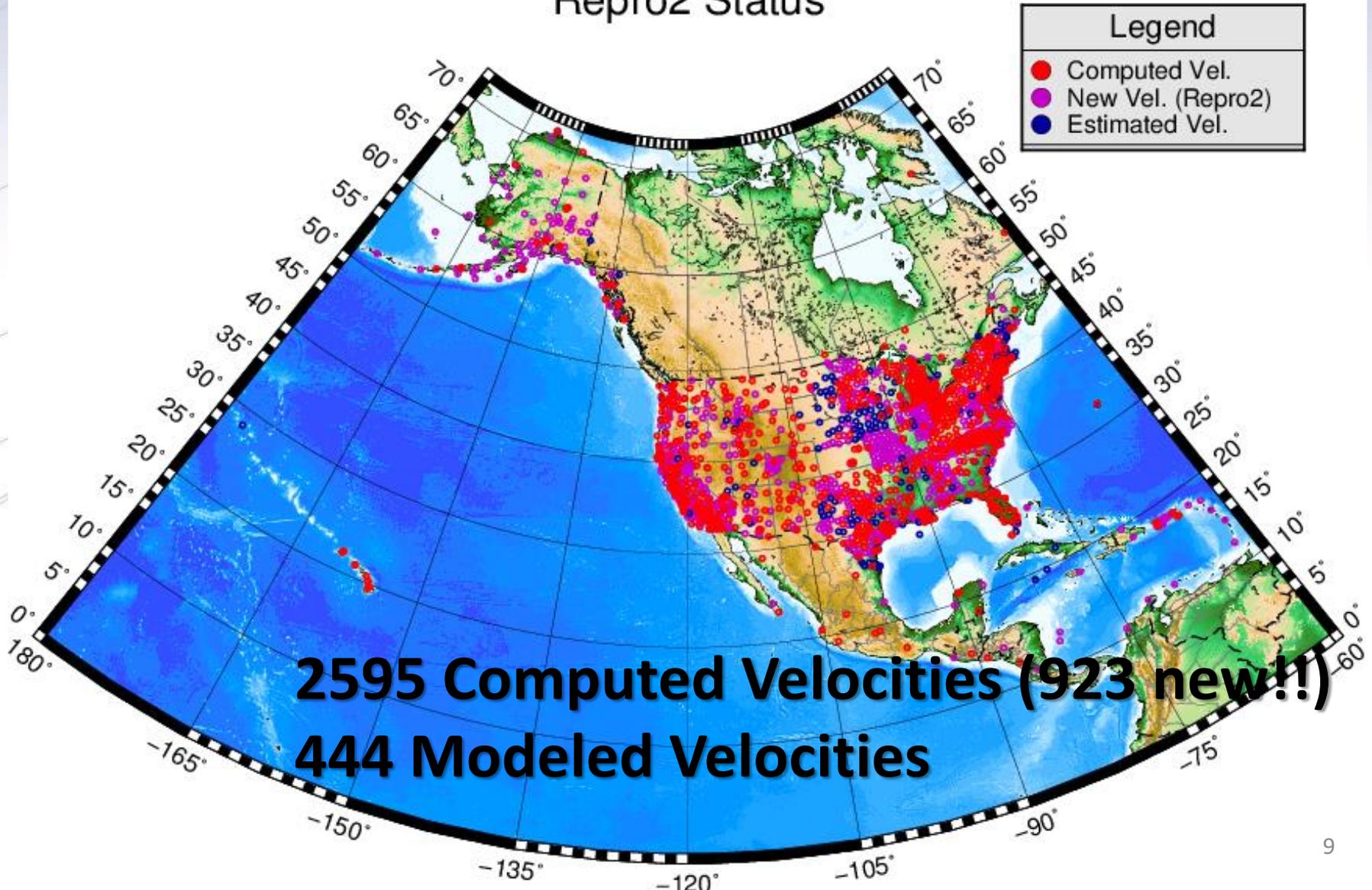
CORS Status



1348 Computed Velocities
1264 Modeled Velocities

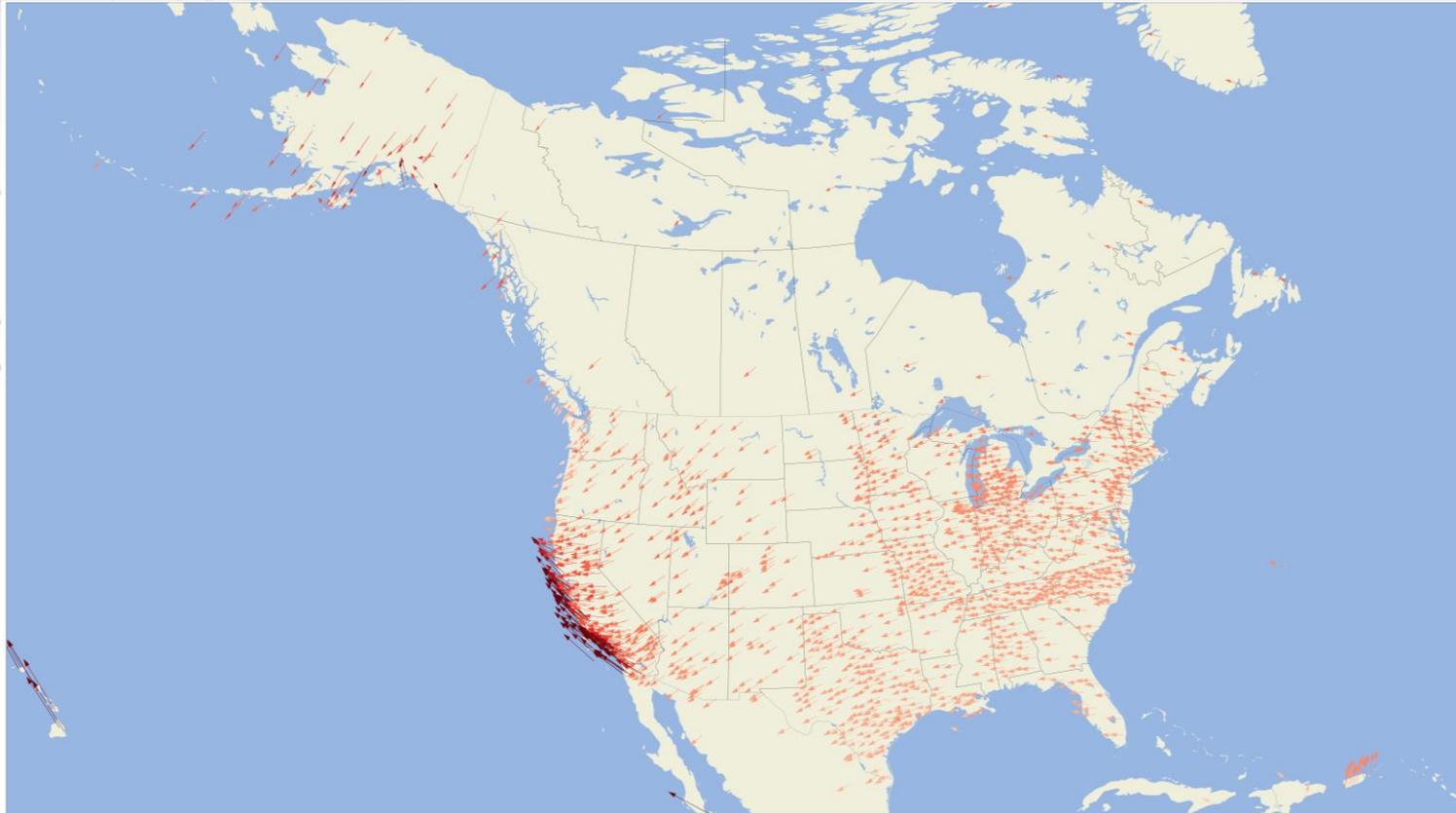
Reprocessing Campaigns

Repro2 Status



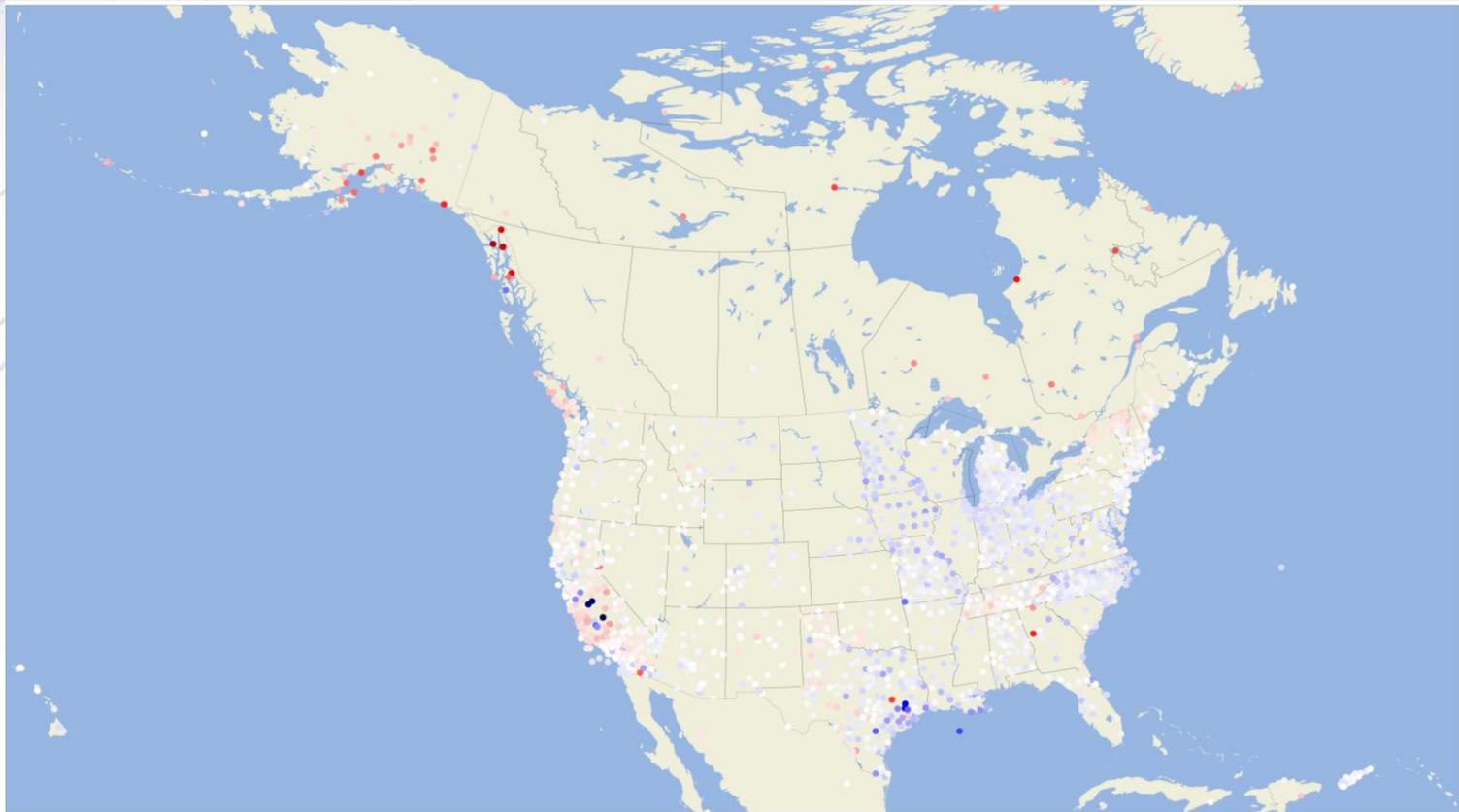
Reprocessing Campaigns

- Pre-preliminary results - Horizontal Velocity

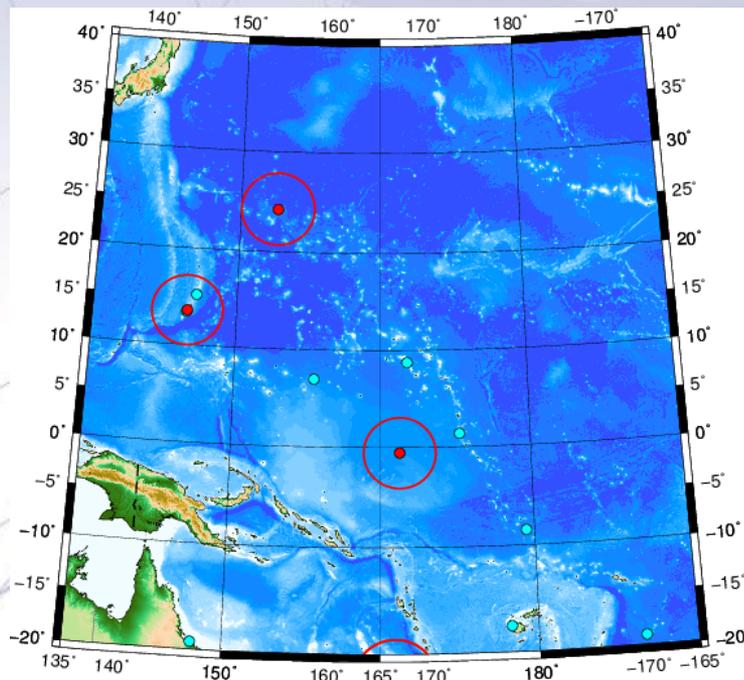


Reprocessing Campaigns

- Pre-preliminary results - Vertical Velocity



IGS14 Reference Frame Stations



IGS14 Stations

